PAA Skipper Ford in Epochal 31,500 Mile World-Girdling Flight

THE AIR LINE PILOT

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UNIVERSITY FEB 20 1942 LOUISVILLE

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First Month of 1942 Sets Stage for Busy Association Year

The Federal Advisory Council for Employment Security was appointed by the Social Security Board pursuant to the provisions of Section 11 of the Wagner-Peyser Act. Due to the numerous persons in the picture, space will not permit identification of all. Seated 7th from left is Arthur J. Altmeyer, Chairman of the Social Security Board; 2nd from right, David L. Behncke, ALPA President.

Council for Employment Security Holds Annual Advisory Meeting

On December 9 and 10, David L. Behncke, ALPA President, attended the annual meeting of the Federal Advisory Council for Employment Security, of which he is a member.

The purpose of this council is to aid in the administration of the nationwide system of public employment offices through formulating policies and discussing problems relating to employment, and the labor market generally, on a nationwide basis, insuring impartiality, neutrality, and freedom from political influence in the solution of such problems.

Members of the council are appointed to represent employers and employees in equal numbers, and the general public. The staff managing the meeting is composed of Social Security Board members. This council was originally established by the United States Employment Service. When in 1939, as a result of the provisions of the President's Reorganization Plan Number One the U. S. Employment Service became a part of the Social Security Board, the council was requested by the Board to continue to advise on employment matters.

The council usually meets once a year, but is subject to call for additional meetings if special problems arise on which the Board feels advice is needed.

In attendance at the meeting in addition to those in the picture were Frances M. Perkins, Secretary of Labor; Paul V. McNutt, Administrator of the Federal Security Agency; and Sidney Hillman, head of the labor division of the new War Production Board.

H. P. "Hi" Little Has New Duties

Shortly after the first of 1942, United Air Lines pilot, H. P. Little, or Hi, for Hiram, as he is commonly known to his associates, entered the employ of the Air Transport Association under what might best be described as a lend-lease arrangement.

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LATE NEWS IN BRIEF

Target

TWA Captain Jimmy Walker reported several days ago at La-Guardia Field that he had seen tracer bullets being fired from the ground as his plane traveled the Philadelphia-New York leg of his trip from Chicago. Later it was established that the bullets seen were fired from the Frankfort Arsenal where tests are constantly being made.

Stratoliners

After the usual period of rumors, it has finally been verified that Transcontinental & Western Air has sold its Stratoliners to the Army for big ship training purposes. These planes have been in regular operation on TWA's coast-to-coast airways since July 1940. The Company will be given smaller equipment to replace the number of seat miles that the Stratoliners afforded.

Cargo

Russell Forbes will be Vice-President and General Manager of Air Cargo, Inc. Most of his time will be devoted to research for this new company which is backed by United Air Lines, American Airlines, Eastern Air Lines, and Transcontinental & Western Air. Mr. Forbes was formerly Purchase Commissioner of New York City.

LaGuardia

Major Elmer Haslett, Director of LaGuardia Field, announced in his annual report that business at LaGuardia was 20 per cent better in 1941 than during 1940.

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Investigations, Hearings, Travel

The first month of 1942 was marked with a rapidly moving panorama of events in widely separated parts of the United States —Washington; Jacksonville, Fla.; Las Vegas, Nev.; and Los Angeles.

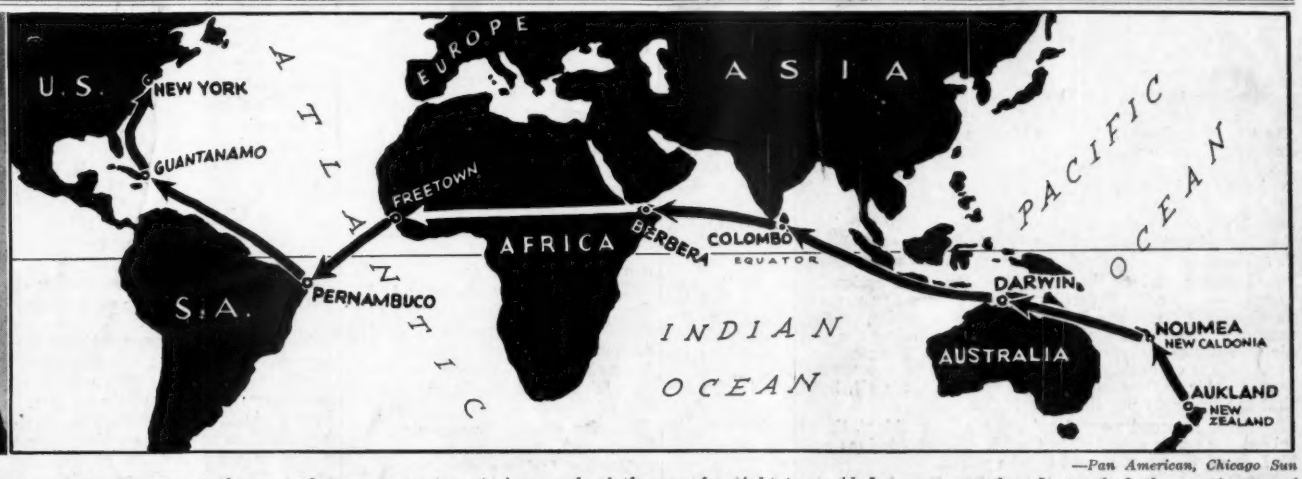
In Washington, numerous matters involving mediation, CAR changes, problems associated with the war, and the EAL pilot "show cause" hearing, were all on ALPA's January agenda. In Florida, a grievance developed on National Airlines, Inc., arising from the release of a copilot and interpretations of the pilots' employment agreement. With the help of U. S. Mediator, Tom Bickers, all of these troubles were satisfactorily resolved. After going into

all of the facts involved in the release of the copilot, it was decided that he should be returned to his former status without prejudice, and the contract misunderstandings were simultaneously settled. Everyone involved deserves to be complimented for his diligent efforts to resolve the differences, which action all concerned felt resulted in more amiable and constructive relations between the National pilots and their supervisors.

Travels 8,000 Miles

ALPA's president, David L. Behncke, traveled nearly 8,000

(Continued on Page 4, Col. 4)



—Pan American, Chicago Sun

AROUND THE WORLD

On January 6 the control tower operator at La Guardia Airport received the following message, "Pacific Clipper inbound from Aukland, New Zealand, Captain Ford reporting. Due to arrive Pan American marine terminal seven minutes." The control tower operator's eyes bulged slightly for he didn't even know that a Clipper was expected. In this instance, there was plenty of cause for surprise because Pan American Skipper Robert Ford's arrival marked the end of one of the most remarkable round-the-world flights to date. It seems that when Pearl Harbor was attacked on December 7, Captain Ford was at Aukland, N. Z., and the predicament in which he and his crew found themselves might best be described by the adage, "between the devil and the deep blue sea." His orders were to return by the best route possible. In this instance, the word "possible" was apropos because it obviously didn't appear that any route was particularly "possible." Captain Ford, being a resourceful chap and not easily discouraged, took careful measure of the situation, and continued on around the world. What turned out to be an unscheduled hop started as a regular scheduled trip on December 2 as the Clipper's 73rd flight from San Francisco to Aukland, N. Z. The entire trip from San Francisco to New York by way of Aukland, took 36 days, with the plane traveling much of the way by night to avoid Japanese attacks. It touched the continents of Australia, Asia, Africa, South and North America, and crossed the equator six times. The total mileage of the trip was 31,500 around the middle of the world. The mileage covered from Aukland to New York was 22,000. Ford made 18 stops under 12 different flags—flew over most of the world's major bodies of water, his longest flight being 3,583 miles. At one time it was necessary to by-pass Singapore and Malaya where severe fighting was in progress. In this area the plane came close to being shot down by friendly aircraft which had momentarily mistaken it for either a Japanese or German ship. In peacetime the amazing journey of Captain Ford and his able crew would have brought world acclaim, but war brings many unusual happenings. Nevertheless, the remarkable achievement of Captain Ford will go down in the annals of aviation history as one of the most remarkable feats of long-distance flying ever accomplished. He and his crew are to be commended. The crew members were: John Henry Mack, First Officer; Roderick N. Brown, Second Officer; James G. Henriksen, Third Officer; Homans K. Rothe, First Engineering Officer; John D. Steers, Fourth Officer; John B. Parish, Second Engineering Officer; John D. Poindexter, First Radio Officer; O. Hendrickson, Second Radio Officer; Barney Sawicki, Flight Steward; V. C. Edwards, Assistant Flight Steward. Shown above is Robert Ford, PAA Captain, and a map of his flight.

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David L. Behncke ..... *Editor*

PILOTS SOLVE ACCIDENT

Although many reports have been made on the Northwest Airlines October 30, 1941 accident, the real lowdown on the origin of the happenings which diverted the conclusions from the usual catch-all "pilot error" category, has never been made public. Here's the story.

An air line pilot who modestly doesn't want his name mentioned was recovering from a serious illness which had confined him temporarily to a hospital. About that time, Pilot Clarence F. Bates, who was in command of the ill-fated air liner when the accident occurred, made his first statement.

In describing the matter, the modest pilot said that while he was recovering, he spent considerable time studying certain aspects of the Fargo accident. There was one significant point which struck his attention. Pilot Bates had testified that the flight was routine up to the point where it reached the final approach altitude. . . . At this point, he ordered retraction of the gear and applied power. Almost immediately, the aircraft began to shake and shudder with considerable movement of the controls necessary to maintain control, particularly laterally. Uncontrolled descent was noted. THE MOST IMPORTANT POINT IN BATES' TESTIMONY WAS THAT OF APPLYING FULL POWER, RETAINING LATERAL AND DIRECTIONAL CONTROL, BUT HAVING UNCONTROLLED DESCENT.

When the convalescing pilot recovered a short time later, he informed his supervisors of his deductions. Their co-operation was immediate and thorough, and test flights were made. The result was that one of the most baffling accidents in the history of air line flying was solved, and what is undeniably one of the greatest contributions to the safety of the air traveling public was placed on the records of air line transportation development. Briefly, the tests revealed a stalled condition of the propeller blades which is quite fully described in the following:

> *Up to the point where full power was applied, blade angles remained normal.*
>
> *After application of full manifold pressure, 42", blade angles were observed to increase immediately to an angle that was considerably beyond (except in the case of 2,450 RPM) what the normal blade angles should have been for that horse power and speed. In the case of 2,450 RPM the blade angle was only 2° beyond this point. However, the indications are that the blade angle increased, with the full application of horse power, to the point where the possibility is strong that the blade airfoil section did stall. This would account for the dissipation of the engine take-off horsepower involved, without any effects being noted in increased speed of the airplane or any tendency for it to fly out of the buffeting condition. A stalled condition of the propeller blades would also account for the severe buffeting of the fuselage noted, and might also cause the stalling of the center section without the wing tips and aileron having been stalled.*

In passing, we would certainly be remiss not to ask what would have been the outcome had Pilot Bates not been saved from death by the sheerest chance. He was thrown through the windshield and free from the burning wreckage, and, with the help of a brother pilot and a wide-awake and co-operative management, was able to point to the real cause of the accident. Certainly that's not hard to answer. Who is there to deny that it wouldn't have been blamed on the dead pilot?

William Randolph Hearst, in his widely syndicated column "In the News" aptly said of the TWA January 16 Las Vegas accident; "Probably they'll blame it on the pilot. They make good scapegoats."

It is a certainty that a multiplicity of investigating committees as now exists plus the federal regulatory agency's present method of investigating itself when it investigates an accident, will not produce the maximum degree of air safety. Merely blaming the pilot will not solve air line accidents nor increase air safety. Thorough and scientific investigations of accidents free from all influence whatsoever by an inpendent Air Safety Board will not solve them all, but it will solve all that are humanly possible of solution.

As the record now stands, the only accident that has been really solved for quite a period is the Northwest Airlines accident at Fargo, N. D., and that was solved by the pilots.

The no-longer-existing Air Safety Board created under the Civil Aeronautics Act of 1938 had, as one of its members, an experienced air line pilot. This law was passed by the Congress of the United States. The following is a direct quotation from this legislation:

"SUCH BOARD SHALL CONSIST OF THREE MEMBERS TO BE APPOINTED BY THE PRESIDENT BY AND WITH THE ADVICE AND CONSENT OF THE SENATE. ONE OF THE MEMBERS SHALL AT THE TIME OF HIS NOMINATION BE AN ACTIVE AIR LINE PILOT AND SHALL HAVE FLOWN NOT LESS THAN THREE THOUSAND HOURS IN SCHEDULED AIR TRANSPORTATION."

What has happened to this in Reorganization Plan No. 4? It is all very confusing. The Air Safety Board must be re-established and wouldn't it indeed be a boon to air safety if the modest pilot who really solved the Northwest Airlines accident could be that pilot member?

—*David L. Behncke*

JAP OR NAZI-WE'LL DO OUR SHARE AND MORE

By JAMES N. GOING
Council No. 5, UAL
Portland, Ore.

From the midst of black-outs and flight restrictions, rumors and facts, everyone in Portland sends greetings and good wishes for 1942.

We're out here on the coast, sitting astraddle of this war that has been expected and talked about by Pacific Coast residents for years. Most persons in the Northwest seem glad it's finally here, and that we can all draw to our inside straight and show the Japs who'll pick up the chips when the cards are down.

Restrictions Bring Out Ingenuity

The Pacific Coast has had a number of alerts and trial blackouts, along with certain flight restrictions that have been modified. The necessary radio silence imposed on the ranges and voice communications over certain areas has been a disturbing factor in schedule regularity, but has given the air lines and pilots a chance to show their co-operation and ingenuity.

No one has moved his family to the interior. In fact, everyone thinks it's pretty interesting to be sitting where things are happening.

So Clever That Everyone Was Confused

Some of the clever (?) ways in which estimates have been radioed certainly fooled any listening Japs because some were so complicated they confused everyone except the sender.

One trip called to another trip flown by Rehnstrom—using Rehnstrom's middle name, a jealously guarded secret, to wit, HECTOR, thereby undoubtedly imparting no information to the "yaller fallers," but exposing Rehnstrom's hidden handle to the public ear.

Dispatcher Placed on Map

Another trip gave a Portland estimate by saying they expected to be over HANNUM (the dispatcher on duty) at such and such a time. The dispatcher was gratified to be placed on the map.

We're naming peaks and valleys, etc., for the senior pilots up this way. So far Eefsen Pass is the only one designated, but we're looking for some good mountain to be named for Garbutt, and maybe a bare knob for Bert Ball.

There is quite a bit of moving around among the younger flight officers. Maybe they can't stand this Portland-Cheyenne long haul and do justice to our 50 lonely stewardesses as well. However, it can't be said they don't try.

Would like to commend Joe Crouch of piscatorial fame for the offering of his service to Boeing Aircraft during his vacation, free for nothing. We all say we would like to help. Joe did more than say so.

Necessity of Air Transportation Illustrated

We do feel we are doing our part though when we see the military personnel, government officials, and shipments of valuable defense materials we carry. Makes a fellow feel justified after all our reiterated beliefs that we are necessary to our transportation system. In addition, our Portland reserve officers have made themselves available on their days off to the Air Base Command for any service they can do. Some of the boys would really like to strap one of

(Continued on Page 7, Col. 3)

Here It is Gents —Now What?

By C. M. HEFNER
Council No. 19, AA
Ft. Worth, Tex.

Headquarters has recently appointed a committee of air line pilots to work with the CAA in an advisory capacity in conjunction with the building of the new Midway Airport.

The committeemen, Robert J. Rentz and Clyde S. McCall of American Airlines, Arthur Mills and M. W. Sellmeyer of Braniff Airways, are chiefly concerned with passing the recommendations of the air line pilots to the builders of the airport before it is built, and not after completion.

Too often an airport is built and then handed to the air line pilots, the men who will use it, with the words, "Here it is, gentlemen. How do you like it?" The present wise move is quite similar to the tailor who measures his applicant before making a suit. He is assured of a fit in that manner.

Work to Eliminate Blacktop Runways

The committee will sit in on such things as selection of site for runways and approaches. A particular effort will be made to eliminate blacktop runways in favor of concrete.

Sometime ago American Airlines changed its policy on pilots' physical exams from two routine exams each year. The new exam includes complete X-rays of chest, abdomen, and teeth, along with a fluoroscopic examination of the stomach, blood count, Wasserman, electricardigraph, etc.

When such an exam was tried five years ago, it did not meet with favor among pilots. However, its present application has met with satisfaction with both the doctor and pilot. In a recent interview with Dr. Hodges McKnight, he gave me a very clear summary of the exams to date.

Avert Serious Trouble in Future

The inception of the new examination has resulted in no permanent grounding of any pilot connected with American Airlines. On the other hand, it has been the means of discovering several cases where minor adjustments made now would avert serious trouble in the future. A good example was in the finding of abscessed teeth. If an abscess is not found and eliminated, it can result in three direct causes of trouble to an air line pilot. They are rheumatism, damage to eyes, and damage to the heart valves.

The interview was particularly informing as to the great strides flight surgeons have taken in co-operating with the pilots to prolong their flying careers. This can best be illustrated by quoting from a speech made by Dr. McKnight at the George Washington School of Medicine.

Can Keep Him Flying

". . . We now come to the subject of pilot maintenance. We like the word 'maintenance' instead of 'pilot care,' because it implies that we can do something to overcome the defects and keep him flying. The Medical Department is not a police force bent on ferreting out disabilities which could keep the pilot on the ground. It has a much more important job than that. The Medical Department not only at-

(Continued on Page 8, Col. 3)

"To fly West, my friend, is a flight we all must take for a final check."

In Constant Memoriam

Accidental *Active*

Adams, John B.—U. A. L.
Anderson, Lloyd—U. A. L.
Andert, Paul A.—U. A. L.
Barrett, Joseph C., Jr.—PAA-Caribbean
Barron, John M., Jr.—A. A.
Bickford, L. A.—Panagra
Bigelow, Ed.—U. A. L.
Blom, Edwin W.—U. A. L.
Bogen, W. L.—W. A. E.
Bohnet, Frederick L.—T. W. A.
Bolton, Harvey F.—T. W. A.
Bontrager, C. M.—R. A. L.
Borchers, Adrian—P. A. A.
Bowen, J. E.—T. W. A.
Bowen, Lewis L.—B. A.
Brandon, James L.—U. A. L.
Briggs, Francis W.—A. A.
Broughton, D. E.—U. A. L.
Brunk, Paul S.—P. A. A.
Bucher, Charles L.—P. A. A.
Chamberlain, Cassius B.—N. W.
Cohn, Hanley G.—W. A. S.
Cope, Alonzo—Marine Airways
Cox, Floyd—Ludington
Davis, Alfred W.—U. A. L.
Davis, Douglas—E. A. L.
DeCesare, Frank—Panagra
De Cesaro, Joseph G.—U. A. L.
Dietz, Stuart G.—E. A. L.
Dixon, Andrew, Jr.—D. A. L.
Dunn, Stephen—Panagra
Fey, Howard—U. A. L.
Fields, Glenn T.—A. A.
Fuller, Ray E.—A. A.
George, Hal—T. W. A.
Gillette, Morgan A.—T. W. A.
Gower, Vernon I.—D. A. L.
Grover, R. Boyd—U. A. L.
Haid, Arthur A.—N. W.
Hale, S. H.—E. A. L.
Hallgren, W. A.—A. A.
Hill, George W.—A. A.
Holbrook, Clyde M.—A. A.
Holsenbeck, W. M.—P. A. A.
Jamellier, Stanley E.—C. A. L.
Jamieson, W. L.—E. A. L.
Jones, Lloyd E.—U. A. L.
Kelsey, Harold J.—A. A.
Kincanon, Ted N.—A. A.
King, George B.—P. A. A.
Komdat, Albert C.—E. A. L.
Lewis, Harry C.—T. W. A.
Livermore, Joe—N. W.
Lucas, Al—W. A. S.
Lucas, Verne—Ludington
Lynn, John B.—C. & S. A. L.
McMickle, Harold—Panagra
Malick, Forrest E.—U. A. L.
Mamer, Nick B.—N. W.
Marshall, Gerald V.—A. A.
Merrifield, Austin S.—U. A. L.
Montee, Ralph—T. W. A.
Montijo, John G.—V. A. T.
Morgan, Howard R.—T. W. A.
Mossman, Russell C.—C. & S. A. L.
Neff, Harold—U. A. L.
Noe, Earl J.—T. W. A.
Norby, Raymond B.—N. W.
Odell, M. T.—A. A.
*Onsgard, Aldeo—N. W. A.
Owens, Clifford P.—W. A. E.
Paschal, A.—P. A. A.
Perry, J. A.—E. A. L.
Person, Addison G.—P. A. A.
Potter, Norman W.—U. A. L.
Pursley, C. H.—Panagra
Radoll, R. W.—U. A. L.
Riggs, Russell S.—A. A.
Robbins, Wm. J. B.—A. A.
Rose, John A.—K. L. M.
Rousch, Chas. W.—N. W.
Rust, F. H.—A. A.
Salisbury, Hervey M.—T. W. A.
Sandblom, J. V.—C. P.
Sandegren, Thomas E.—U. A. L.
Saucedo, J. M.—P. A. A.
Scott, P. T. W.—T. W. A.
Scott, Philip C.—U. A. L.
Scroggins, Lowell V.—P. C. A.
Sharpnack, J. W.—U. A. L.
Sheets, Don W.—Panagra
Sherwood, George C.—W. A. E.
Supple, Robert E.—Panagra
Tarrant, Harold R.—U. A. L.
Terletzky, Leo—P. A. A.
*Thomas, L. E.—E. A. L.
Thompson, A. R.—U. A. L.
Underwood, Sanford L.—A. A.
Vance, Claire K.—U. A. L.
Waldron, Joe—A. A.
Walker, M. A.—P. A. A.
Wallace, Clyde W.—T. W. A.
Weatherdon, Edwin—A. A.
West, F. W.—N. W.
Wieselmayer, Otto—P. A. A.
Williams, Wayne C.—T. W. A.
Williamson, F. B.—E. A. L.
Worthen, John A.—W. W.
*Wright, J. S.—T. W. A.
Young, George S.—U. A. L.
Zeier, Carl F.—C. & S. A. L.

Natural

Blomgren, Lloyd I.—A. A.
Cochrane, Robert M.—U. A. L.
Fife, John A.—C. A.
*Gambee, Harley T.—T. W. A.
Hohag, E. J.—N. W.
Jamieson, Leland S.—E. A. L.
McConaughey, Ira M.—A. A.
Phelps, Henry T.—P. A. A.
Swanson, Axel—A. A.

Inactive

Anderline, Frank W.; Ashford, Ted; Barr, Julius; Burford, Dean W.; Caldwell, G. Q.; Drayton, Chas. M.; Hulsman, Herbert W.; Hunter, Lewis W.; Judy, H. R.; Kerwin, J. J.; Noyes, Dewey L.; Ormsbee, F.; Riddle, Glenn L.; Roulstone, J. J.; Rousch, Usher E.; Shelton, Boyd M.; Stark, Howard C.; Veblen, E. H.; Walbridge, Donald C.; Wheaton, Harold H.; Whittemore, Fred W.; Wolf, John F.; Willey, Sidney L.

Waiting List

Brock, Wm. S.; Kiser, Daniel.

Unemployed

Downs, Lloyd; Hays, George L.; Keadle, Floyd E.; Rhiner, L. H.

Active U. S. Air Corps

Darby, James E.; Nelson, Franklin S.

Honorary

Greene, Dr. Ralph; Rogers, Will.

* *Apprentice Member.*

Speculation and Potentialities

By JEFFERIS STETSON
Council No. 6, AA
Boston, Mass.

Ducks seem to be the principal item of discussion heard in the inner sanctum of the local council.

Speculation as to their potentialities was well answered when a one and one-half pounder coincided with the right windshield of one of our DC-3's and, not satisfied with that amount of damage, proceeded aft to neatly embed itself in the cabin door, causing a large bulge. It appears to be one of those cases of an irresistible force meeting an immovable object, however, as both the above mentioned object and force are the worse for the encounter.

Favors Fancy Grille Work

Numerous suggestions for increased safety in the matter of windshields have been put forth—all of them worthy of the alert minds and keen perception invariably to be found in the technical and constructive discussions emanating from groups of pilots anywhere in the world who may have a few minutes to spare from their duties. Capt. Wayne Allison is in favor of fancy grille work — preferably in stainless steel — which might or might not lend the appearance of the outside of one of New York's more exclusive night clubs. Possibly the most constructive opinion, made by Capt. Al Sellmeyer, was that we all be equipped with baseball masks. That too has its drawbacks as I personally have always wanted to avoid eating my meals through or behind bars. Note—no objection to stripes on my sleeves though.

Speaking of definite conclusions, Capt. Hank Osborne did it. No details were released to the press, but Wayne Allison and Johnny Adams were, as usual, in the center of any local excitement—the cat that ate the canary had nothing on them the next day—guess they were best man and groomsman respectively.

Declares He Personally Has Two Cents

The bride takes a lovely picture, and you ought to see H. O.—Eureka!! I wonder who signed those initials. The station manager at Boston issued a reprimand in letter form to the effect that newspapers would be bought and not rustled from the cabin. Directly under Council Chairman Allison's apoplectic explosion, that he personally had two cents and was sure everyone else had, was neatly penciled the small notation, "Don't Read—H. O."

The subject of schedules on A.M. 18, Boston-New York, has long been a sore point, with all concerned doing much tearing of hair and gnashing of teeth. Chairman Allison, however, finally produced a practical version of the well-known Ouija board, drilled holes for pegs, bought a box of elastic bands, threw in some fish line, tacks, and chewing gum, and began turning out schedules. Surprisingly enough it's a great success. New York crews are speaking to Boston crews — feudin's called off until spring. The chief pilot took the board to see if he could find the magic combination and also to keep Wayne out of trouble.

No Trouble Is News

Among the miscellaneous overheard at La Guardia Field the other night—Tower gives Eastern permission to taxi from the hangar to the ramp (Contact Taxi Rules). Bill Cheney, draped over the flight control counter, says nothing new, and he's not in trouble. Figure that is *news*.

Clarence Harmon and Chuck O'Conner are the only Boston men who can turn out at six o'clock with a broad smile and no complaints. Clarence, incidentally, is the Boston authority on the foreign situation in general or in particular.

Well as Chuck O'Conner would say at the end of the last trip—let's get off of this rat trap before the wheels fold up.

ALPA members will be interested to know Capt. J. W. Westover, AA of A.M. 30, is now on active duty in Boston on the Army Flying Cadet Board. Your correspondent had to sneak a look at his logbook to find that out. Modesty indeed! Local Army men probably aren't aware of such an experienced and distinguished pilot in their ranks.

—*TWA Photo*

ATMOSPHERE TWA STRATOLINER PILOT, HARRY CAMPBELL, AND NOW FOUR-ENGINE INSTRUCTOR AT EAGLE NEST FLIGHT CENTER HAS ABSORBED THE "WILD WEST" ATMOSPHERE AT ALBUQUERQUE, N. M., WITH A VENGEANCE. HANDSOME CHAP, WHAT!—CALLING ALL MOVIE TALENT SCOUTS.

NEW BOOKS

Captain E. B. Jeppesen, United Air Lines pilot, compiler and publisher of the Airway Manual, recently made a limited discount offer on the sale price of his Airway Manual until present stocks are depleted.

The Airway Manual, a 1,000 page loose-leaf, sturdily bound book, covering the entire field of instrument avigation, is kept up to date by regular monthly revision service with special supplements issued during the month when required. Its compactness and complete coverage of vital instrument and contact flying information make it an ideal cockpit companion, worthy of being included in every pilot's avigation kit.

In readily accessible form, all properly indexed, it sets forth in detail an accurate picture of every airway in the United States. It gives specific let down procedures for every airport in the country equipped with radio range facilities. All U. S. airports, including CAA intermediate fields, are indexed by regions, showing runway lengths and surrounding obstructions. Terrain profile charts and instrument avigation charts are important features of the manual, and are arranged in proper sequence to avoid needless thumbing and lost time.

Also included in the Airway Manual is complete meteorological data, listing all teletype and weather stations, and map signals; as well as mileage charts giving fan marker locations and accurate mileage combinations formed by all radio beam intersections. Consolidated tables are provided to climinate the necessity of adding mileages, thus increasing the speed of reference and reducing potential errors.

This all-inclusive manual has been officially adopted by a number of air lines, and is extensively used by the Army and Navy, as well as by itinerants. Kept up to date by continuous research by competent engineers, Captain Jeppesen's Airway Manual is unique in its field and should prove a worthwhile addition to any pilot's kit. It's value becomes increasingly important in view of the war and the attendant possibilities of changes in destination, or special-duty flights made necessary by the exigencies of national defense.

Further information may be had by writing to AIRWAY MANUAL, 5030 East Colfax Ave., Denver, Colo.

Dons $50 Outfit To Bag 0-0 Ducks

By THEODORE J. JOHNSON
Council No. 48, C&S
New Orleans, La.

Just about all that's on one's mind these days is the war situation, so it's rather difficult to think about the little things that happen in our everyday lives in the way of news.

We all know that our jobs are going to be affected in one way or another, but I know I am speaking for all of us when I say we are ready to do our part in whatever way we can.

Cupid Chalks Up Another Victory

Cupid has been busy on our line. His dart socked Bob Belfry and Anita Howard, who until recently was one of our stewardesses. We all join in wishing them much happiness.

The greatest duck hunter to date has proven to be Elmer Bennett. At the beginning of the season, Elmer togged himself with a $50 outfit. He had never indulged in such sport, so figured he had to look like a duck hunter to bag ducks. His outfit consists of hip boots, hunter's britches and coat, and a hat that is of the Sherlock Holmes variety.

He has been spending most of his time off trying to estimate how many ducks he will have to kill to pay for the outfit. So far he has gone out hunting twice and bagged zero-zero ducks.

Just a Case of Too Much Celery

We are glad to have Vic Hoganson back on the line after what was thought to be an attack of appendicitis, but which turned out to be a case of eating too much celery. Vic was so hungry for celery that he ate the strings and all, and the strings sort of tied up his intestines. Anyway, he is all right now, and we think he is through with celery for awhile.

Capt. Thorn Wagner is now a champion golfer. In the New Orleans hole-in-one contest Thorn socked the ball four feet from the hole. Just a little closer and he would have won a very nice prize, but Thorn felt well satisfied with a choice golf ball as a prize.

Eames Is Mysterious Offender

Capt. Ralph Eames, who spends most of his days off playing golf, says there are too many water hazards on New Orleans' courses. If the city ever finds out it is Ralph who is filling up the lakes with golf balls and causing the former to overflow, there will be the dickens to pay. The boys who make their living fishing out golf balls are very happy, however.

Capt. Stewart Hopkins has purchased a Link Bubble sextant, and is going in for celestial navigation in a big way. He is doing a right fine job in getting fixes and lines of position. If one could watch "Happy" in the cockpit, he would be seen on the floor or bent around in most any position, trying to shoot some star or planet that isn't conveniently located in the sky. He says he doesn't want to bend the ship around to suit the situation as the passengers might wonder what was up.

We are glad to see Dick Johnson back on the job after a siege of flu which kept him in the hospital for a few days.

ATMOSPHERIC TURBULENCE

The subject of atmospheric turbulence has long been one of interest to the air line pilots and aeronautical engineers. Turbulence is associated directly with engineering stress analysis, piloting and passenger comfort, which brings it within the scope of almost universal interest in air transportation. At the suggestion of the Air Line Pilots Association, Mr. L. P. Harrison, a leading meteorologist of the U. S. Weather Bureau, has prepared an interesting and very informative article on the subject of atmospheric turbulence, which will appear in the AIR LINE PILOT in serial form. The first installment follows.

1. Introduction

It is essential to pilots to have a good comprehension of atmospheric turbulence owing to the influence of irregular air motions upon passenger comfort, controllability of the aircraft, and gust loads imposed on wings, etc. Since it is of the utmost importance to avoid piloting an airplane into conditions where (a) the actual gust loads will exceed the design gust loads and serious structural damage could be caused by turbulence, or where (b) the plane might be driven out of control. Pilots naturally have to be familiar with the circumstances under which turbulence of severe intensity might be experienced. Reports of severe turbulence and its effects are of inestimable value in providing a basis for the safe conduct of future aerial operations and the design of aircraft to withstand the gust loads met with in practice.

The purpose of this article is two-fold: (1) to describe the meteorological aspects of turbulence, and (2) to promote discussion among pilots regarding scales and terminology suitable for reporting turbulence encountered during flight.

Following one major airplane crash, the Civil Aeronautics Board recommended the development of a generally acceptable scale of measurement of turbulence and a standard terminology for the various types of turbulence. It was further recommended that methods should be developed for collecting and correlating the experiences that airplane pilots may have with exceptional turbulence or other unusual atmospheric conditions.

Before the aviation industry can derive benefits from such experiences on a scientific basis, it is necessary to have the reports expressed in terms which are standardized and are capable of fairly precise translation into the data required by aeronautical engineers and meteorologists. The subject of scales and terminology is discussed in the last section of this article, but before undertaking that, it is advisable to review the phenomena of turbulence. It is hoped that pilots will give their careful consideration to the feasibility of reporting turbulence in accordance with a prescribed scale, and that they will render comments aimed at achieving the desired goal.

2. Definition of Turbulence

Turbulence may be defined as irregular motion of the atmosphere generally produced when air flows over a comparatively uneven surface or around obstacles, such as those on the surface of the earth, or when two currents of air flow past or over each other in different directions or at different speeds. The term "turbulence" is applicable to the irregular motions associated with vertical as well as horizontal currents of air. ("Bumpiness" is a term commonly used for small scale turbulence encountered in the free air.)

3. Basic Types of Turbulence

Turbulence can be classified according to cause as: *mechanical* or *thermal*.

Mechanical turbulence may be regarded as due to the forced departure of bodies of air from smooth flow by the disturbing action of irregularities on the surface over which they are passing or of irregularities in bodies of air adjacent to them. On a submicroscopic scale, mechanical turbulence is dependent upon friction or viscosity between adjacent streams of air molecules moving relative to one another. On the vastly larger scale of mechanical turbulence in the free atmosphere with which the pilot is concerned, the surface irregularities involved range from blades of grass to mountains.

Thermal turbulence may be regarded as due either (1) to the vertical motions of bodies of air which are lighter (less dense) than their surroundings because of higher temperature acquired in some manner, and thus ascend because of buoyancy; or (2) to the vertical motions of bodies of air which are heavier (more dense) than their surroundings because of lower temperature, acquired in some manner, and thus descend because of the action of gravity.

All turbulence in the atmosphere involves both mechanical and thermal processes so that it is not always possible to draw a definite line of distinction between the two basic types under consideration. The fundamental thermal process which controls the thermal turbulence is *thermal convection*, described in the next section.

(Continued on Page 8, Col. 1)

EVERYBODY HELPED Even the girls lent a hand when volunteers of Douglas Aircraft Company's great production army placed sandbags to safeguard their vital assembly lines in event of possible air attack. Fifteen thousand employees donated time and labor to the government and to their plants by erecting sandbag barricades and other precautionary facilities at strategic places in buildings and around equipment. During their off-duty hours in a two-day period, the "defense volunteers" returned in large contingents to the Douglas Santa Monica, El Segundo, and Long Beach, Calif. plants to erect sandbags weighing in all some 6,800,000 pounds.

Utterings of A Draftee

By J. M. JONES
Council No. 31, AA
Burbank, Calif.

Webster defines a scribe as "a writer or copier of manuscripts." My definition of a scribe is "a member who missed the last ALPA meeting." Since I have always been a conscientious objector against this job, my writings will be merely the utterings of a draftee.

No doubt the other councils are aware of the fact that there is a war in progress, and no one is reminded of it more often than we are in Los Angeles. Operations have been limited to contact day flying only, and the city itself has been witnessing a series of black-outs.

"Lights Off" Means Just That

For some reason the populace does not realize the seriousness of the situation, and they are not co-operating to the fullest extent. The first night a black-out was called at the Lockheed Air Terminal 30 minutes were required to extinguish the lights. Later when a black-out was designated for the district in which I live, the street lamps were not turned out until 20 minutes after the alarm was sounded. You can see where such poor co-operation on the part of the utility companies certainly isn't helping the situation any. I hope that this condition will improve, and that it won't be necessary for the enemy to drop a pill on the town before it does.

The interceptor command of the Army appears to be taking no chances on a surprise attack, and doesn't hesitate to cease all operation at the slightest provocation. As soon as this thing settles down to a steady roar, I feel that some system will be worked out whereby the air lines may be flown in and out of this area (Los Angeles) with a minimum amount of confusion.

$12 Hotel Rooms Not Hard to Take

Airway beacons have been turned off, and all radio ranges are subject to being turned off at any time without notice. A great number of our trips have been terminating and originating at Phoenix and Palm Springs. I might add that the boys aren't crying much about the Palm Springs operations as they stay at the El Mirado Hotel in $12 rooms, with such accessories as a tile swimming pool, etc. It's on the American plan (and I don't mean air line).

The Army has sent out a request to all officers in the War Department Reserve pool for voluntary participation in Civilian Defense Activites. I have heard several pilots express themselves as being willing to serve on some sort of coastal patrol duty on their days off. I feel the air line pilot can best serve his country by doing this type of work with the stipulation that it not interfere with scheduled trips.

Masonic Memorial Tower Lighted

When the new Washington National Airport was placed into use several months ago, it became evident that the tall Washington Masonic memorial tower, located in Alexandria, Va., was a menace to air navigation because of improper and insufficient lighting. The pilots using the airport pointed this out, and the Association became active in securing more extensive and better lighting for this obstruction.

According to reports of the Civil Aeronautics Administration, this work is now going forward with all expeditiousness, and it is expected that it will be fully completed in the near future.

Winged Couriers of Good Will

Forced to pull up to 16,000 feet to clear jungle mountains—much so-called "green hell" jungle covered during the trip—inaccessible, sinister, and unexplored. Natives tell stories of Brazil's great colonies of ants that move through the jungles devouring every leaf and living thing in their path, animal or vegetable. They speak of vampire bats who settle silently upon their human victims and drink their fill of blood without as much as disturbing their slumbering blood donors. These are things that Skipper James E. Farris talks about in this, the fifth installment of his good will tour through South America.

Stories told us in camp explained how there existed in Brazil great colonies of ants that move through the jungles devouring every leaf and living thing in their path—animal or vegetable. Then, too, there is the vampire bat, which the local residents claim can settle down so easily on man or beast that it can drink its fill of blood and leave without awakening its victim. It is said that the bat emits a fluid which so effectively numbs the area punctured that the sleeping victim does not feel it, and the victim is likely to suffer serious loss of blood before awakening.

The Bolivian air line surveying party at an Indian village outpost school in the Bolivian jungle. Skipper Farris is holding a mammoth set of alligator jaws.

When our weather break came, we proceeded the additional 285 miles to Para on the south bank of the Amazon. Had we but known of this recently constructed airport at Macapa, we could have used it as an alternate and not had to return to Lake Amapa, but news of this airport had intentionally been kept secret in accordance with some Brazilian defense plan.

3,000 Mile Jaunt Around Brazilian Coast to Rio

Resting a few days in Para, where we based the plane at the Pan American Airways seaplane base, we were ready now for the 3,000-mile jaunt around the Brazilian coast to Rio. Believe it or not, the Brazilian coast is over 4,000 miles long. Leaving Para, we made about 1,500 miles that day, refueling en route twice, and stopped at Recife (Pernambuco), Brazil, landing there on the water after dark. As we passed over Natal, which is north of Pernambuco, it was just getting dark, so I decided to stop there, but the General was anxious to push on. After surveying the local airports, both land and water, for obstructions in the event we should have to return, we proceeded down the coast toward Pernambuco where the coastal country is flat with no obstructions, and overhead was a large beautiful tropical moon.

Arriving at Pernambuco we ran into the only rain squall in South America. An enormous one was sitting right over the town, and it was now quite dark. We flew down and touched the water with the hull to reset the altimeters, and pulled up to await either the passing of the squall over Pernambuco or to return to Natal. We finally got a break, however, and went in and, after dragging the water runways between the buoys several times, landed on the water, taxied up to the Pan American base and remained there overnight.

Couldn't Buy Aviation Gas on Good Friday

The local authorities advised us that since the next day was Good Friday all business would be stopped, that not even railroads operate on Good Friday in Brazil, and that consequently a little thing like buying aviation gas on the morrow was absolutely unthinkable. The Brazilian law provided that we could not buy gasoline from Pan American; it had to be bought from private companies. So we refueled the evening we landed, and decided to go as far the next day as our fuel would conveniently take us. We got as far as Bahia, which had the best hotel accommodations, and remained there overnight. A great part of the city of Bahia is built on a tall pinnacle, and the city furnishes elevators to the populace for their ascent and descent from the city to sea level. We landed in the water at a beautiful seaplane base built by the Brazilian Government at Bahia.

The next day we set out for Rio de Janeiro (meaning River of January), refueling at probably the prettiest little town aside from Rio on the west coast of Brazil. This was Victoria.

Rio Lives Up to Hollywood Version

The trip to Rio was uneventful and proved little except that Brazil is awfully large. Rio is just like it is pictured in the movies. We were met by a large party of officials and also North and South American newsreel photographers. We stayed in Rio approximately a week, and made several courtesy flights with local naval officers. Our ship was harbored at the Santos Dumont Airport. The Brazilians fervently claim Santos Dumont as the Father of Aviation, since he is accredited with having made the first powered flight, which was in a balloon. The Escadrille participated in a decoration of his tomb in Rio.

Our next stop was Sao Paulo (third largest city in South America), which has the greatest snake farm in the world, an unusually interesting sight, displaying mostly South American snakes. It was started by the Brazilian Government principally to create snake serums for people in the interior to counteract snake bites.

From there we proceeded to Curityba and refueled en route to Asuncion (meaning the Ascention), the capital of Paraguay, which is almost in the center of South America. Due to overcast weather and no radio bearings, cancellation appeared probable at Curityba, but since the expedition was somewhat late a different flight plan was set up whereby we would leave Curityba toward Iguassu Falls to the westward and fly toward our "point of no return," saving enough fuel to come back to the coast, which is always open. If during the interim the overcast broke, we would proceed on our trip.

Pulling up to 16,000 feet over jungle and mountain, we flew westward, and when we reached our "point of no return" the over-

(Continued on Page 6, Col. 2)

Again Fashionable to Blame Pilots

(Continued from Page 1)

miles during January attending hearings and conferences in Washington, mediation proceedings in Florida, and a crash investigation in California. More than half of the month was spent away from ALPA Headquarters.

The National Mediation Board proceedings started in Washington on January 8 and later shifted to Jacksonville where conferences were held on January 10 and 11 which resulted in a settlement.

EAL Pilot in "Show Cause" Case

In Washington on December 29 additional arguments were presented by both the Civil Aeronautics Administration's legal division and the defenders of Frederick B. Cann, EAL pilot, in a "show cause" order proceeding which was instituted by the CAA on October 26, 1941. Regular hearings were held in Savannah on November 4, 5, and 6. The basis of the action was a blown tire resulting in a ground loop causing slight damage to the airplane. The CAA charged that the pilot landed under limits, and, of course, the principal defense of the pilot is his statement of what he could see from the cockpit which to nonflyers, laymen, lawyers, and various other ground personnel, is very likely not to be given proper weight.

Probers Rush Into the News

The hearing on the TWA-Las Vegas accident of January 16 was held in Los Angeles on January 23 and 24. Obviously, it is too early for any of the numerous investigation agencies who were investigating this case to have reached final conclusions as to the cause or causes of this accident. However, it seems that one of the investigating committees could not withstand the urge to rush into print with a preliminary report on a nationwide basis and in a most unfair and one-sided manner.

Ghosts of the Past Resurrected

This committee heard that Wayne Williams, pilot of the ill-fated air liner, was in 1933 (mind you, in 1933) involved in a National Labor Board hearing where various charges were handled rather promiscuously, none of which could conceivably have had any bearing on his flying ability at that time, and certainly can have no bearing eight years later when Williams had accumulated 9,000 additional hours making a total of almost 13,000 hours to establish one of the finest air line flying records yet recorded. This trouble occurred during the early days of ALPA when the pilots of TWA were represented partly by a company union and partly by the Air Line Pilots Association. Pilot Williams was chairman of the TWA-KC Pilots' Executive Council No. 3, when this trouble occurred. Since that time, the company union has been dissolved and the president of TWA has been replaced plus much additional shifting of the company's official family.

ALPA Spikes Guns of "Pilot Error" Publicists

In any event, this irrelevancy and its nationwide publicity resulted in a flood of press notices on January 28. The effect of this was to a large extent spiked by clarifying statements from ALPA Headquarters on the same day setting forth the facts.

Hearst Defends Pilots

On Sunday, February 1, William Randolph Hearst in his powerful and extensive chain of papers, came to the defense of the deceased pilots, Wayne C. Williams and Morgan A. Gillette, in his famous and widely-read column "In the News." Mr. Hearst, who did much to establish the original Air Safety Board which was abolished on May 14, 1940 by Reorganization Plan Number 4, devoted 2,300 words, his entire column, to the subject of blaming the pilot for air accidents in which he said, *"Probably the pilots will be blamed. They make good scapegoats—and besides that, they are not here to defend themselves."*

News Commentator Goes to Bat for Line Pilots

On the radio, February 2, Cal Tinney in his three-times weekly "Sizing Up The News" broadcast over the Mutual network, took issue with the investigating committee on their apparent attempts to bring in an eight-year old incident to discredit the late pilot Williams.

Commentator Tinney is often compared to Will Rogers. He speaks with a pleasing drawl and an accent from the wide open spaces. Though he is but 27 years old, Tinney has had a very colorful background, having been a rodeo manager, a deckhand, country newspaper editor, and cowboy.

Of the incident in question, he remarked in effect that the probers of the crash had evidently overshot the field of common sense when they brought up an incident eight years old to discredit the pilot.

It would indeed be a happy coincidence if Cal Tinney were regarded as the successor to the late Will Rogers who was a staunch friend and defender of the air line pilots, and carried an honorary membership in ALPA.

Pilot Error Vogue in Comeback

The Air Line Pilots Association has for some time felt that the Civil Aeronautics Administration is slowly but surely reverting to the pre-Civil Aeronautics Act of 1938 vogue of blaming practically everything on the pilot. The pilots have displayed a great deal of patience in this situation, but such patience is rapidly being worn threadbare. In each of the investigations by the Safety Bureau, which is supposed to replace the former independent Air Safety Board, but doesn't, when the hearings end, the statement is always made, "This investigation is never closed. It shall remain open to hear and consider any evidence that may aid in the solving of this accident at any time in the future." This may not be in an exact quote, but that's what it amounts to.

Pilot Lives, Accident Solved

On October 29, 1941 an accident occurred on Northwest Airlines from which the pilot miraculously escaped death. Based on his statements, the company was able to conduct tests to ascertain the cause. For this, it deserves the highest commendation. Now, the question naturally arises — how many other accidents were due to the same cause? Also, the question arises—why doesn't the CAA make some effort to find out?

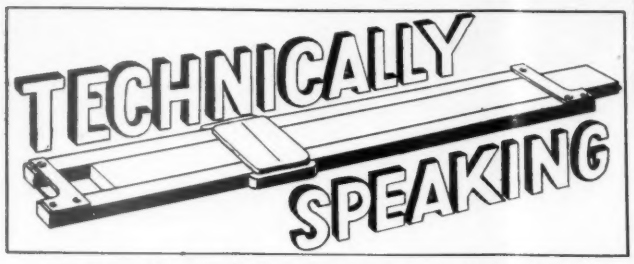
They might start with the Chicago UAL accident of December 4, 1940 where witnesses talked of hearing the pilot apply the power and almost immediately the plane settled earthward from its flight path and crashed. Both of the pilots were instantly killed and promptly blamed for the accident.

Uniform Altimeter Settings Studied

The Association has long promoted the idea of establishing a uniform method of setting altimeters.

It has been generally agreed that in view of the large number of parties who are actively interested in this problem, i. e., army, navy, itinerant, and air line pilots, including all of the air carriers, this matter should be made the subject of a round-table conference between all of the interested parties before the uniform method of setting altimeters is finally adopted.

The Civil Aeronautics Administration has proposed that such a conference be called in the near future at which representatives of the army, navy, private fliers, air carriers, and the Air Line Pilots Association will be invited to attend. This conference will be held in Washington, but no definite date has yet been set.



ICING PROBLEMS OF AIR LINE AIRCRAFT

The following paper was presented before the Society of Automotive Engineers by R. L. McBrien of United Air Lines Transport Corporation. The information included in this presentation is of outstanding interest to line pilots, and was obtained principally from trip icing logs and test flights conducted on a major air transport system. It is hoped that the publishing of this article, which is a very complete and informative resume' of the subject, will result in development whereby ice accumulations on airplane surfaces, propellers, etc., can be better analyzed, reported, and subsequently more effectively prevented. This article will appear in installments in the AIR LINE PILOT, reprinted through the courtesy of the "SAE Journal."

In presenting this discussion of icing problems attendant to the operation of transport aircraft, it is desired to first express appreciation to all of those United Air Lines pilots who reported in considerable detail their specific experiences when encountering ice formations during routine operation of scheduled flights. Without their genuine interest and cooperation in supplying photographs and supplementary information, a writing of this nature would not be possible.

Members of the United Air Lines Engineering Department have contributed substantially by assisting in collecting information and by offering helpful criticism in the arrangement of material. Acknowledgment is also accorded to the flight test and engineering divisions of American Airlines whose conduct of the first tests to determine the nature of ice formation on propellers in flight has been of inestimable value.

Fig. 1. Ice accumulation in one instance developed when de-icing operation was continuous through a region where glaze ice was being accumulated which again proves that currently-used ice removing equipment is not always effective.

The major source of information upon which the following discussions are based is a collection of trip icing logs covering individual experiences of scheduled flights over a period of five winter seasons from 1936 to 1941. These logs are in the form of questionnaires, details of which have been completed by our flight officers as the conditions were met. On occasions special flights were conducted into regions where weather data indicated that ice accumulations should be encountered. These flights, however, were not always satisfactory and proved to be an expensive method of study, as the ever-changing meteorological conditions often brought in different air masses before the locality could be reached. Where moderate to heavy icing had been reported by scheduled operations, only a trace or no ice at all would remain when the test airplane arrived. Rather than by continuing to chase these "will-o-the-wisp" icing regions, the more practical method, though more time-consuming, has proved to be that of maintaining a systematic record of our cumulative experiences gained in the conduct of routine schedules.

Types of Ice and Occurrence

Ice accumulation on aircraft has been reported in our experience at indicated atmospheric temperatures between —20 F and +37 F.

Lowest altitudes at which ice was reported for each month covered by these reports are shown in the following table:

Month	Average of Lowest Altitudes Reported, ft.	Lowest Altitude Reported, ft.
October	9,500	6,000
November	7,000	1,600
December	7,500	3,000
January	6,700	600 (Surface)
February	8,100	3,000
March	8,900	4,500
April	11,700	6,000
May	12,000	12,000

The above altitudes are in reference to sea level.

Meteorologically classified, ice formations fall into three basic types, listed in the following. As encountered, however, adhering ice is usually one or a combination of Types 1 and 2. The degree of roughness and the particular forms resulting are seldom the same for any two separate experiences.

1. RIME—This type is formed by small cloud particles. It is hard but porous, white, and opaque. Small grains, air spaces, and frost-like crystals are found within the mass. Accumulations of this type of ice form on the leading edges of exposed parts and project forward into the air stream. They exhibit little or no tendency to adhere to the contour of an airfoil outside of a limited region at and near the stagnation point. However, points of localized surface roughness, such as protruding rivet heads, skin laps, and edges of fairing strips, that are exposed to the direct impingement of the air flow also serve as anchorages from which rime-ice protuberances build.

Rime is usually encountered in a stable air mass. If surface temperatures are above freezing, descent to a lower altitude with temperature above 32 F affords the most certain exit from the icing region.

2. GLAZE—Glaze, or clear ice, is produced by freezing raindrops and sometimes by large cloud particles. Its surface may be either smooth or rippled. It adheres very firmly to the surfaces upon which it forms and is most difficult to remove with present available anti-icing equipment. Only on relatively infrequent occasions is pure glaze encountered by aircraft. More often the formation also includes sleet or snow which render its surface rough and irregular. Due to the larger size of the particles contributing to glaze accumulations, higher rates of icing are experienced than with rime. Also larger areas of the aircraft surfaces are covered. The formations tend to adhere more generally to the surface contours of exposed members.

It is characteristic that glaze formations are encountered along sections of the airway where, due to air mass conditions, a temperature inversion exists because of an overrunning warm front. To emerge from glaze-forming conditions, without turning back, the aircraft must ascend to higher altitudes.

3. FROST—Frost may be formed on a metal airplane which suddenly flies out of a cold air mass into warmer air. If the temperature of the metal surfaces is below 32 F and also below the dew point of the warmer air, a sudden ice condensation will result that hardly more than dulls the shiny metal surfaces. The formation soon evaporates as the blast of air passing over the plane quickly warms it to the new air temperature. Occurring during flight, this is of no practical importance. However, airplanes have been reported to exhibit peculiar performance characteristics, during early-morning take-offs, that were attributed to frost accumulations forming on the top wing surfaces of planes which had been parked outside of hangars overnight. The regular use of canvas wing covers, which are removed prior to dispatching, has been successful in eliminating any hazard from such cause.

Airplane Ice Accumulations

The ice formations adhering to the component parts of an airplane may be grouped into two major classes: (I) those producing a loss-of-flight performance, and (II) those which serve as an annoyance to the operators or occupants without primarily affecting the flight characteristics inherent to the design of the aircraft or its engines.

Performance-Reducing Formations

Ice accumulations causing a loss in performance of aircraft will here be identified by the name of the part of airplane on which they form and accordingly the performance of which part they directly affect.

1. WING ICE—The flow of air about the surface contours of a wing results in the production of forces which support the airplane in flight. This flow of air, and the resultant forces, follow in definite relationships with regular changes in the contours of airfoil sections. For instance, changing the wing section by the extension or lowering of the wing flaps produces a definite, predictable change in the forces acting on the wing.

Irregular changes in the wing section occurring at unprescribed locations, however, result in an indefinite and unpredictable change in the supporting forces. Briefly, this is the background of the importance attached to the prevention of or removal of ice from airfoils whose function is to support or propel aircraft in flight. It is not the purpose of this paper to delve into aerodynamic theories regarding the influence of different ice formations. Rather, it is intended to describe and to illustrate, in so far as possible from our experience, the variety of types of ice which are encountered and to discuss the use and limitations of present de-icing systems.

Wing de-icing of the large majority of commercial transport aircraft operating in this country is by means of rubber inflation tube de-icers. These devices are installed on wing leading edges, and their function is to remove ice after it has formed on the rubber surfaces by the stretching of the rubber in contact with adhering ice. The tubes extend along the wing's leading edge spanwise and, as they inflate they will, under favorable conditions, crack their covering of ice loose so that it is caught by the air stream and blown clear of the wing.

Removal of ice forming on wings as described in the preceding paragraph is not always assured by merely starting de-icer operation as the icing region is entered and stopping their operation after emerging. Experience has shown that such a procedure often aggravates ice roughness along the wing without removing any appreciable amount.

Continuous Operation of De-icers Not Always Successful

Fig. 1 illustrates the condition developed in one instance when de-icer operation was continuous through a region where glaze ice was being accumulated. This was only a light icing condition but the ice was forming at such a rate that, between each successive tube inflation, only a thin coating of ice was added to the de-icer. Upon inflation this thin coating, rather than being blown clear, was crazed into many small patches of ice which remained on the rubber surface and served as anchorage points for further building of ice on them as bases. Successive inflations produced the same patterns in crazing the accumulating ice with the result that many individual projections formed to present the roughened de-icer surface covering the wing's leading edge. The smoothness of the coating of glaze ice over the landing light gives an indication as to the evenness of the adhering ice for portions of the wing not equipped with de-icer shoes.

The procedure adopted as a result of such happenings has been purposely to avoid operating the de-icers until an ice thickness of approximately ⅛ in. is attained. They are then operated for a short period to sufficiently crack loose this thicker formation so that it is blown from the wing in sizable sheets. The de-icers are then turned off until the ice thickness again approximates ⅛ in. Intermittent ice removal in this manner is continued until the region is passed. The thicker ice does not craze extensively as does the very thin ice under which the de-icers work when they are operated continuously at and from the time the icing zone is first entered.

Intermittent De-icing Procedure Difficult to Use at Night

At night the intermittent procedure cannot be followed easily due to the inability of flight personnel to observe satisfactorily the progress of ice formation. Lights are being installed in the engine nacelles which will have sufficient power to illuminate the wing along its leading edge and permit close observation of the conditions developing.

During the building up of formation at a very rapid rate, however, it may be advisable to operate the de-icers continuously as it is possible to permit a thickness of ice to build up which is strong enough to prevent inflation of the tubes. With present de-icing equipment its successful operation depends much upon the experience of flight personnel and upon their judgment in its use.

An unusual case of wing ice accumulation was reported during January, 1941. The captain of one of the night trips between Denver and Omaha reported that his flight was at 9,000 ft. in a moderate rain. Outside air temperature was 31 F, but windshield ice was not forming, and de-icer shoes were not used as ice was not forming on the leading edge of the wing. A steady falling off of the airspeed from an indicated 155 mph to 125 mph made him suspicious of an increasing parasitic resistance. An inspection of the wings with a long-beam flashlight showed a rough accumulation of ice on the de-icer attachment fairing strip and forming on the top surface of the wing in patches from 1 ft. inside the landing light to the tip. During descent when a temperature of 35 F at 7,000 ft. was reached, the ice melted and washed off in the rain, and the airspeed indication returned to normal.

An explanation of this occurrence is that the scrubbing action of the impinging rain kept all leading edges free of any ice that might have had a tendency to form. As the water drops streamed back over the top surface of the wing and entered the region of high negative pressure, they were turned to ice as a result of evaporation freezing.

Rubber inflation de-icers bring up other points that bear mentioning during a discussion of their use. After their rubber ages or takes on a slight permanent set as a result of the initial tension with which it is essential to install them, they lose some of the resilient qualities originally possessed. As a result, they do not recover rapidly during tube deflation to the contour of the wing surface. Eventually "ballooning" develops. Ballooning is a lifting of the de-icer from the wing surface which makes the part appear to be partially inflated, though system air pressure is not present in the tubes. In advanced stages, the elastic area of the shoe between the attachment strip and the inflation tubes is raised from the upper wing surface by the forces created by airflow over the wing at that location and the aerodynamic lift of the wing is reduced. Such shoes, of course, must be replaced as soon after detection as possible. Employment of vent holes in low-pressure areas has only partially relieved the likelihood of ballooning.

News! News! Not A Drop to Print

By J. B. MAGENIS
Council No. 10, PAA-Caribbean
Coral Gables, Fla.

And now I'm supposed to write a newsletter. If I could call in PAA correspondents from Lisbon, Leopoldville, Rio, Natal, Para, Manila, Hong Kong, or Fairbanks, I'm sure even the front page could be made.

As it is, all we know at this writing is exactly summed up by the total number of news items the members have placed in my mailbox—exactly nil.

Has First Meeting in Umpteen Months

But there is local news of quite some importance. A few weeks ago Council No. 10 had its first meeting in umpteen months. Credit must be given to Chairman Ralph Phillips for getting the ball rolling. Now it is up to the rest of the gang to keep it rolling, and in the process don't forget your news correspondent — pictures, births, items, anything of interest will be appreciated.

Speaking of births, the Eastern Division is really boosting up the birth rate statistics. Lately there has arrived a Miss Phillips, a Mr. Walker, a Miss Biggers (Willie is passing out cigarettes — another girl), two Miss Harrells. On the fire we have a Magenis and a Fahey. They tell me that maybe I should include a Borg — who knows!

As for recent transfers, I'm swamped. Beginning at the bottom of the list and going up, we have Capt. S. R. McLaughlin, First Officers L. S. Boeck, F. K. Schader, Louis Cogliani, and R. J. Jensen, plus those whose names have been added since I last looked at the list.

Details From Proper Authorities

There is a never-ending stream of rumors, he said, and I have heard. But this usually well-informed source will allow the proper authorities to elucidate on the details. However, there is no doubt that there is a story in the making that is the beginning of the end for the uneasy deified heads of Europe and Asia.

Maybe even the Pacific Division can break down and tell us something of the trips of Capts. Robert Ford and Fred S. Ralph. The thought of the Pacific Clipper out of New Zealand asking clearance to land at La Guardia is rather interesting. How's about it? Tell us.

Before the black-out brings this rambling epistle to a close, I wish to express the sincere sympathy of the group to the family of First Officer Joe Barrett, who was killed in a training flight out of Miami, and the hope that the ensuing investigation will prevent the occurrence of this type of accident in the future.

Eastman to Head Created O.D.T.

Joseph B. Eastman, a member of the Interstate Commerce Commission and commonly recognized as the country's most outstanding transportation expert, has been appointed Director of the Office of Defense Transportation within the Office of Emergency Management which was recently created by the President.

The heads of each of the following departments and agencies will designate a responsible representative to maintain formal liaison with the Office of Defense Transportation: Departments of War, Navy, Treasury, Interior, Agriculture, Commerce, Labor, the Interstate Commerce Commission, Maritime Commission, Civil Aeronautics Board, Federal Works Agency, Federal Loan Agency, Board of Investigation and Research, Office of Production Management, Office of Price Administration, and the Economic Defense Board.

New Outer Marker Beacon Developed

Resulting from an ALPA suggestion made at a meeting with John Easton, Chief of the Technical Development Division of the Civil Aeronautics Administration, relating to airport lighting, a new visual type outer marker airport beacon is being developed.

It is intended to be installed about two miles from an airport in each of four different directions. This beacon is designed to project a high-intensity beam vertically into the air and to oscillate it from that position down toward the airport.

Officials are hopeful that this arrangement will penetrate both fog and ground mists, and give a pilot of an approaching aircraft a definite indication of the direction of an airport when any of the beacons are seen. It is also felt that this lighting arrangement will furnish circling aircraft with a visual perspective that will greatly aid the pilot in circling a field and maneuverng his craft into a safe position for landing, especially during inclement weather.

Brookings Reports On Air Line Rates

In a special study by the Brookings Institute entitled "Air Mail Payment and the Government," it was suggested that it is time for the Civil Aeronautics Board to exercise its authority to fix rates over all kinds of air transport business.

It was pointed out that profits on some routes are so great that the Board "must decide whether the rate of air mail compensation shall be reduced or whether it shall take its first step in regulation of passengers and express rates." It was also suggested that profits on such lines might be reduced by charging to them part of the costs of navigation aids now furnished by the Government, but the lines affected might consider themselves penalized for efficiency.

In the early days of air transportation all air lines operated at a deficit. In order to promote aeronautic development air mail pay was fixed on the basis of need rather than cost or value, but now that profits have grown so large, mail payment on the basis of need is no longer called for.

Recommends Against Construction Hazards

In their report on TWA's January 23, 1940 landing accident near Robertson, Mo., the Nichols' Committee to Investigate Air Accidents recommended that the Civil Aeronautics Administration should discourage use of airport space for manufacturing and other aviation activities which constrict the active airport space and create new hazards to aviation. Highlights of the accident report include the following:

(1) There were numerous obstructions and hazards at Lambert Field; (2) that in circling the field for a landing, the captain collided with unlighted trees situated 2,200 feet from the airport and at an elevation 113 feet above the airport.

(3) TWA had discontinued the use of the short-line teletype service at Lambert Field, so that it could not receive and transmit the special weather report of 4:09 a. m. until after the crash at 4:13; (4) there was a want of co-ordination in the transmission of Weather Bureau information to TWA; and (5) the first officer did not observe altimeter readings after the plane broke through the overcast on its final approach to the St. Louis Airport. *(The first officer is dead??)*

PILOTS ALL **Three famous pilots intently watch a Stratoliner take off. Actor Wallace Beery is right at home when he's with pilots. Back in 1927 he met TWA Vice-President L. G. Fritz and took a ride with him aboard a Ford tri-motor plane, being ferried from Dearborn, Michigan to Los Angeles. That first trip sold Beery on flying. Mr. Fritz and TWA Captain Eddie Bellande gave Beery his first flying lessons. Before long Beery was flying his own plane. Here he chats with Mr. Fritz and Vice-President Richter during a recent stopover in KC. They've all known each other for years. Many line pilots have carried Wallace Berry and report him to be a "regular."**

Trail Blazing

(Continued from Page 4)

cast became broken to scattered, and we dropped down over a river we could not recognize. However, inasmuch as the river ran to the westward and was as large as a young Mississippi, we decided that we would continue on and if necessary land on the river and ask our whereabouts, since scattered villages were visible. We later found that while on top of the overcast we were blown 108 miles to the southward of the river we had intended to pick up and follow to Iguassu Falls, at which point this east and west river we were supposed to follow emptied into a much larger river, the Rio Parana, which runs north and south.

A town at this junction known as Iguassu Falls was to be our next refueling stop enroute to Asuncion, Paraguay. Incidentally, this river paralleled the one we were over. After flying along and allowing for as much as a possible 100 miles an hour head wind during our elapsed time, it became obvious that we were not over the right river because it made a turn to the southward and did not intercept a river running north and south. We had only a small strip map covering the area from Curityba to Iguassu Falls, which showed one east and west river, and since we had unknowingly been blown off the area covered by this map to the southward while on top of the overcast without any radio bearings whatsoever, we naturally took this large river as the one we had planned to pick up and follow.

Landed on Pasture Covered with Stock

We casually approached a small town for a water landing on the river, but discovered a pasture that appeared preferable. Since it was covered with stock, it became a problem diving on the field to keep the chosen landing area clear of sheep, horses, and cattle at the same time. After seven or eight passes at the field with the propellers in low pitch, we finally cleared a place and drug the field, the wheels lightly touching the ground, at flying speed with full flaps. This appeared smooth enough so we came around again and landed in our tracks. The town proved to be San Javier, Argentina. Inasmuch as the Argentine Army authorities chose not to release us that night, we were detained until the next day. We stayed overnight at a very primitive lodging house.

Telegraphic communications with our Embassy in Buenos Aires finally secured our release. The next morning in preparing for a take-off, we found that the terrain immediately ahead rose with such rapidity that our flight would be scuttled for good in the event of a motor failure on the take-off. The pasture owner kindly consented for us to remove a fence, and a couple of hours were spent chopping down ant hills and marking off puddles with handkerchiefs on sticks, which gave us a nice long runway. We said our goodbys, and a 20-minute flight took us to Posadas, Argentine, where we refueled and then continued to Asuncion, about 2½ hours from Posadas. The flight to Asuncion was a barnstormer's delight. We followed the one and only railroad track in clear weather from Posadas to Asuncion.

Had Been Given Up as Lost

Asuncion, a city and river port in the heart of South America built right in the plains, looms up all at once like a city out of a desert. There was no reception for us at Asuncion. We had been given up as lost. In spite of the fact that the night before we had sent a message from the plane, while sitting on the ground at San Javier, to Rio de Janeiro that we were being detained overnight, and it had been confirmed by the Rio operator for immediate relay to the American Legation at Asuncion, this message had only beaten us to Asuncion by 45 minutes. This shows with what degree of dispatch things are handled in Latin America and bears out the manana attitude ever-present there. In the meantime the American Legation had advised the State Department in Washington, D. C., that General McCoy and his mission were lost.

FIFTY MILLION

The Third Supplemental National Defense Appropriation Act, 1942, provides $50,000,000 for landing areas of which not to exceed $2,375,000 shall be available for administrative expenses. It raises the limitation upon the number of landing areas from 399 to 503. Other provisions are for $84,000 for maintenance and operation of the Washington National Airport, and $190,000 for observations, warnings, and general weather service.

Civil Air Regulations — Legislation

Additions - Changes - Amendments

SPECIAL REGULATION 196
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE NOVEMBER 21, 1941.

"Notwithstanding the provisions of Parts 40 and 61 of the Civil Air Regulations which deal with airway route requirements, pilot and aircraft dispatcher route competency, and the amending of air carrier operating certificates and competency letters, the scheduled air carrier, which has been issued an air carrier operating certificate authorizing operations over the area in which the Royal Canadian Air Force is conducting maneuvers in the southern portion of Ontario, Canada, may conduct from November 21, 1941 to February 1, 1942, inclusive, scheduled day and night contact and instrument operations over such temporary route, with such facilities and personnel, in accordance with such procedures and practices established by the Administrator for this operation as the Administrator may deem sufficient to protect the safety of air transportation."

SPECIAL REGULATION 197
ADOPTED DECEMBER 5, 1941,
EFFECTIVE DECEMBER 5, 1941.

"Notwithstanding the effective date of amendments Nos. 60-25 to 60-43, inclusive, to the Civil Air Regulations, the Administrator, in the interest of safety and after finding it necessary for the proper control of air traffic, may designate new or additional, or amend or repeal any existing designation of, control zones of intersection, radio fixes, airway traffic control areas, or control airports."

CAR AMENDMENT 20-23
ADOPTED DECEMBER 10, 1941,
EFFECTIVE DECEMBER 10, 1941.

Permission to Use Aircraft

This amends Section 20.617 to read as follows:

"20.617—Permission to use aircraft. The owner of an aircraft shall not permit any person to operate such aircraft unless he has ascertained that such person is the holder of an appropriate currently effective pilot certificate by actual examination of the certificate and by requiring such person to identify himself as the person referred to in the certificate. If any pilot is found to have piloted an aircraft after December 10, 1941, without possessing an appropriate currently effective pilot certificate, the owner of the aircraft will be presumed to have permitted such piloting in violation of this section."

CAR AMENDMENT 60-25
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Control Zones—Section 60.103

This amendment merely changes the word "Board" to "Administrator" and the note at the end instead of reading "(See Section 60.21 for a list of control airports)" reads "For a list of control airports, see AIR NAVIGATION RADIO AIDS published periodically by the Administrator."

CAR AMENDMENT 60-26
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Control Zone of Intersection—Section 60.105

This amendment changes the word "Board" to "Administrator" and the note at the end reads "For a list of control zones of intersection, see AIR NAVIGATION RADIO AIDS published periodically by the Administrator" in lieu of "(See Section 60.22 for such designation)."

CAR AMENDMENT 60-27
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Radio Fix

Section 60.112 is amended to read as follows:

"60.112—Radio Fix. A radio fix is a geographical location designated by the Administrator on a civil airway above which the position of an aircraft in flight can be accurately determined by means of radio only, (such as a cone of silence marker, Z type marker, fan type marker, or intersection of radio range 'on course' signals).

"Note—For a list of designated radio fixes, see Navigation Aids published periodically by the Administrator."

CAR AMENDMENT 60-28
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Airway Traffic Control Center—Section 60.120

The Note at the end of this amendment is changed to read, "For a list of airway traffic control centers, see Air Navigation Radio Aids published periodically by the Administrator," instead of "(For a list of airway traffic control centers, see Appendix D)."

CAR AMENDMENT 60-29
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Airway Traffic Control Area

This amends Section 60.121 to read as follows:

"60.121—Airway Traffic Control Area. An airway traffic control area is an area within the limits of an airway designated by the Administrator and over which an airway traffic control center exercises control of air traffic.

"Note—For a list of airway traffic control areas, See Air Navigation Radio Aids published periodically by the Administrator."

CAR AMENDMENT 60-30
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Control Airports

Section 60.21 is amended to read:

"60.21—Control Airports. The Administrator, in the interest of safety, and after finding it necessary for the proper control of air traffic may designate as a control airport any airport in the United States."

CAR AMENDMENT 60-31
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Control Zones of Intersection

This amends Section 60.22 as follows:

"60.22—Control Zones of Intersection. The Administrator, in the interest of safety, and after finding it necessary for the proper control of air traffic, may designate any radio range station located within the limits of a civil airway as the center of a control zone of intersection."

CAR AMENDMENT 60-32
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Airway Traffic Control Area

Section 60.23, as amended, reads:

"60.23—Airway Traffic Control Area. The Administrator, in the interest of safety, may designate such portions of the civil airways as airway traffic control areas as may be necessary for the proper control of air traffic."

(Continued on Page 8, Col. 4)

Little Has Big Task

(Continued from Page 1)

Pilot Little has long been interested in problems of air traffic and radio communications procedures, with particular reference to plane-ground station messages. He has been a member of the Air Line Pilots Association's Air Traffic Control and Airway Aids Advisory Committee ever since its inception two years ago. He has represented the Association at various hearings and conferences where air traffic control and communications problems were discussed, and his new appointment is no doubt in recognition of the interest, aptitude, and thorough knowledge of the subject that he displayed while representing the ALPA.

Will Travel Extensively

His new duties will consist largely of traveling about the country visiting the various air traffic control centers for the purpose of introducing shorter and more precise methods of plane-ground radio communications and to untangle troublesome and involved air traffic difficulties where they may be found to exist. In addition, he will interest himself in problems of properly co-ordinating the air traffic procedures of the air lines and the various branches of the services.

By this time you will have gathered that Hi has been assigned a job of considerable magnitude. However, when this was pointed out to him he said, "Well, I feel I can do it with a reasonable amount of co-operation from all concerned." It is felt that he will be accorded all possible co-operation.

The problems that he is seeking to solve are numerous and difficult and unless something is done to solve them effectively and in a common-sense manner, it goes without saying that safety will be jeopardized.

Roosevelt Signs Flight Strip Bill

Because of the need of the Federal Defense Highway Bill (S 1840), President Roosevelt signed this measure, despite his disapproval of certain "objectionable authorizations."

Two provisions — the authorization for flight strips along highways and that for access roads to defense industries and Military and Naval Reservations—actuated his endorsement, the President said.

This approval of flight strips is interpreted as an indication of an increasing emphasis on flight strips that may be undertaken by the administration. The present measure contains $10,000,000 for construction of flight strips at locations selected by the Army and Navy Air Forces. A recent War Department survey revealed that as many as 500 locations for flight strips would be advantageous, according to Gen. George H. Brett, head of the Army Air Corps.

The President stated in a letter to Sen. McKellar that: "In spite, however, of the objectionable authorizations which this bill contains, I have felt constrained to give it my approval because of the authorization which it provides for the construction of access roads to Military and Naval Reservations and defense-industry sites and flight strips for the landing and take-off of aircraft. These two authorizations represent immediate and genuine national defense needs, and I do not think that I would be justified in taking any action that would further delay the accomplishment of these objectives."

Among the various authorizations which the President has asked that Congress eliminate is the $50,000,000 for a strategic network of highways and bridges.

The measure must be supplemented by an appropriation bill to secure funds, which will probably be requested in a deficiency appropriation measure. The Secretary of War regards flight strips and access roads as urgently important.

Bulwinkle Heads Subcommittee

The new seven-man subcommittee on aviation was appointed recently and has begun hearings. As reported previously, this is a permanent subcommittee of the House Interstate and Foreign Commerce Committee which will consider civil aviation legislation. The members of this committee are as follows: Alfred L. Bulwinkle, Chairman (D) — N. C.; Clarence F. Lea (D)—Calif; William P. Cole (D)—Md.; Lyle H. Boren (D) — Okla,; Charles A. Wolverton (R)—N. J.; James W. Wadsworth (R) — N. Y.; and Charles A. Halleck (R)—Ind.

All of the new subcommittee, with the exception of Congressman Wadsworth who did not vote, voted against the President's reorganization plan to eliminate the Air Safety Board and take away the independence of the Civil Aeronautics Authority.

On December 8 the committee met to begin hearings on the bill H. R. 5695 to amend the Civilian Pilot Training Act of 1939 so as to provide for the training of civilian aviation mechanics.

TWA Council No. 3 Is Now 100 Per Cent

In a recent membership report, Master Chairman Dan Medler reported that the membership of the TWA Kansas City Local Executive Council had for the first time reached a 100% membership.

In this report Medler went on to point out that all of the TWA pilots over the entire system were now, with one exception, 100% ALPA organized. This may not be very noteworthy to newcomers, but to old-timers it presents quite a remarkable phenomenon. When ALPA was first organized a little more than ten years ago, TWA pilots under the leadership of the late Harold George were almost 100% members of ALPA. A short time later they became involved in company union activities, and after jockeying back and forth for a number of years, new leadership finally took hold and this, together with the many new pilots that had been added, was responsible for the move to rejoin the ranks of the country's air line pilots under the banner of their national organization.

AXIS SHIPS GROUNDED

Axis powers were dealt a sharp blow when the United States-owned oil companies declined to continue supplying gasoline—automatically causing the grounding of German and Italian commercial air operations in western South America. Grounded in Brazil were 23 German planes operated by the Condor air line, a subsidiary of Lufthansa incorporated in Brazil, and three Italian Lati planes.

Japs or Nazis

(Continued from Page 2)

those P-39's to their personal empennage and cut loose.

Christmas, Tom 'n Jerry's, and New Year's are a thing of the past. Schedules are straight, and no one is mad at anyone else because he had to take out such and such a trip on Christmas day. But late or not, from all of us to all of you, a sincere wish for a swell year full of good luck and good flying. We know we speak for everyone when we say that come feast or famine, Jap or Nazi, we'll do our share and more. As far as air liners are concerned, we'll "Keep 'Em Flying."

LATE NEWS

(Continued from Page 1)

Ferry

The Army Air Corps Ferrying Command recently announced that civilian pilots will be employed to pilot aircraft to nations receiving lease-lend aid. These pilots will be employed for an initial period of 90 days as civil service temporary employees. The starting salary will be $3,600 per annum. To qualify, applicants must be between 21 and 46 years, American citizens by birth, and must meet flying time and flight test requirements.

Abandoned

TWA air line hostesses will no longer be required to be Registered Nurses, according to a statement made recently by C. M. Metchler, superintendent of passenger service, in which he said, "we do not feel justified employing graduate nurses the armed forces may need. Henceforth we will require as an alternative a minimum of one year of college." TWA will, however, include nurse's training in their six-week course of specialized instruction for its new hostesses.

Connolly

Robert Hinckley, Assistant Secretary of Commerce for Air, recently announced that Brig. Gen. Donald H. Connolly has resigned as Administrator of Civil Aeronautics, effective January 15. Mr. Connolly is returning to active Army service, and will direct civil air activities for the War Department.

Charles I. Stanton, Deputy Administrator, will succeed Mr. Connolly as acting Administrator of the CAA.

INAUGURAL **With civic officials and air line representatives participating, special ceremonies this month marked the inaugural of United Air Lines' Mainliner service into Salem, capital of Oregon. Pilot Grover Tyler, veteran 2,000,000-mile pilot for United, brought the first regularly scheduled Mainliner in from the north. Oregon's governor, Charles A. Sprague, headed the welcoming committee. Mrs. Sprague officially christened the plane "City of Salem." Left to right, Captain Grover Tyler, Stewardess Mary McGonigle, and Governor Charles A. Sprague. A similar service was inaugurated into South Bend, Indiana.**

THERE WILL ALWAYS BE AN ENGLAND

An airplane was crossing a broad expanse of water when about midway something went wrong with the motors. On board were the pilot and three passengers, a Nazi, pronounced "Nutsy," an Italian, and an Englishman.

It soon became evident that the plane was losing altitude and that the load would have to be reduced, whereupon the pilot informed the passengers that one of them would have to jump out so that the plane would be able to proceed to its destination. The German got up, clacked his heels together, snapped to a salute, and said, "Heil Hitler" and dived overboard.

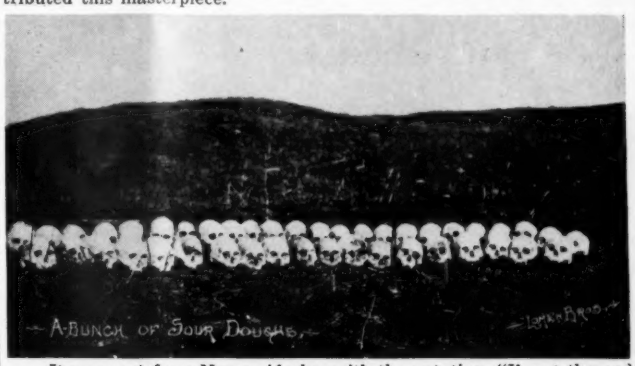
Everything went along fine for a short period until the pilot again said "Things are still bad. In fact they are rapidly getting worse. Another one of you will have to jump overboard or we'll never make the airport of our destination."

This time the Englishman responded, snapped to attention, and said, "There will always be an England," whereupon he threw the Italian overboard.

* * *

THE LAST CONVENTION

One of our north of the Arctic Circle aerial rawhiders by the name of B. B. "Buckshot" Lien, of Pan American Alaskan fame, contributed this masterpiece.



It was sent from Nome, Alaska, with the notation, "I'm at the end of the line, awaiting better weather."

We hope that the "end of the line" expression wasn't too literal, and that the weather did really improve. Evidently the sourdoughs in the picture learned a little too late that all that glitters is not gold, etc., etc.

* * *

NOT SO DUMB

One of our members came to Headquarters several days ago and reported that he had seen the following ad in a matrimonial agency publication: "Nice appearing young man, good moral character, trustworthy but lonely would like to correspond with a young lady with four new automobile tires." *Doesn't want much does he?*

* * *

HE RANKED THEM ALL

A colored church was holding its annual revival. Visiting preachers had come to speak from faraway points. Finally, when the entire congregation was seated, the parson of the home church began by introducing the visiting preachers in one-two-three order.

He said, "First, Mose Brown from Louisiana. He ranks high in the clergy. Second, we have Joseph Brown from Georgia who ranks high in the clergy."

Then, after pausing impressively for quite a period of time, he went on and said, "Now, ladies and gentlemen, it is my great pleasure to introduce to you at this time George Washington Hamilton Lewis Harris, from Alabama, the rankest of them all."

* * *

TRY THIS ONE ON YOUR HARP

This is a story about two Indians . . . a big Indian and a little Indian were sitting on a fence. The little Indian was the big Indian's son. What relation was the big Indian to the little Indian? His father, of course! "Naw." Wrong again, you twerp! His mother.

Who's a twerp—The spinner of this yarn more than likely. Maybe you are right at that. It is kind of awful, isn't it?

* * *

THE LETDOWN

Immigrants Abe and Ike had just arrived in New York from Central Europe. They were walking down the street quite jubilant about being in a free country where everybody was considered equal and there was no race prejudice. "Abe," said Ike suddenly. "I am going into that store and buy us a dozen nice big yellow oranges." This he did, but quickly emerged looking terribly disappointed. "What happened, Ike?" said Abe, sensing Ike's distress. Ike answered "It's the same thing in New York as in Europe. I ask for oranges and the store man says 'For Jewice?' I says 'yes,' and what happens! I get the scrawny little green ones. Oi yoi yoi."

* * *

X MARKS THE SPOT

Two Swedes were out fishing one day and luck was bad, in fact, very bad—they had only one herring between them, and it was in a sandwich. Finally, after much rowing about, they hit a good spot and got their limit in less than an hour. Because they felt it best not to offend the game warden, Olie and Sven gave up for the day.

With much concern Olie said to Sven, "Ye viz, Sven, maybe ve von't find the same spot tomorrow."

"Don't vorry," said Sven. "I have put a cross on the bottom of the boat."

"Sven," says Olie, "that von't vork; Ve may not get the same boat tomorrow."

* * *

TISH! TISH!

In the days of Queen Elizabeth, 'tis said, some of the ladies of the court liked to curl up with a good book, while others preferred simply to curl up with one of the pages.

* * *

THERE OUGHT TO BE A LAW

Dear Old Lady (watching plane in air)—"What happens if the engine stops?"

Smart Pilot—"That's the trouble, lady. We have three ships doing nothing but taking food and water up to those stranded pilots."

ATMOSPHERIC TURBULENCE

(Continued from Page 3)

4. Thermal Convection Under Dry Air Conditions

On a normal, clear summer day, the sunshine rapidly warms the ground. The temperature of the ground thus increases after sunrise, gradually at first and then more rapidly until the maximum temperature is reached shortly after noon, usually between 2 and 3 p. m. Then, as the sun gets lower in the sky, the outward radiation from the earth generally exceeds the incoming radiation from the sun so that the surface temperature drops, at first rapidly and then more slowly. At night, when clouds are absent, radiation from the surface out to space induces notable cooling until the minimum temperature is reached about dawn.

The foregoing processes lead to a more or less regular diurnal variation in temperature of the surface. Air which is in direct contact with it must partake of its temperature changes by conduction of heat, hence the lower air which is subject to mixing by the action of turbulence will undergo a cycle of thermal changes like the surface. Additional temperature changes are brought about by the absorption and emission of radiation by the water vapor and carbon dioxide contained in the air. However, when these constituents are relatively small in amount, the effect of radiation by the air is of minor import in controlling the temperature, while conduction and mixing are of major import.

Lower Air Is Warmer From 11 A. M. to 4 P. M.

Since dry air is a poor absorber of radiation, the upper air, which is out of contact with the surface, does not undergo the same temperature changes as the lower air. Accordingly, during the warmer part of the day (say from 11 a. m. to 4 p. m.), the lower air is much warmer than the air at higher altitudes up to say 6,000 feet above the surface.

During the night, especially near dawn when the surface temperature is low, the lower air is not much warmer than the air above, or even may become cooler, by radiation heat loss, than the air 1,000-1,500 feet above. In the latter case, an "inversion" prevails through a thin layer near the surface; that is, the temperature increases with height instead of decreasing as it does under normal daylight conditions. (Inversions are more commonly produced and are more intense in winter than in summer because the net radiation of heat from the surface occurs more rapidly when the air aloft holds less moisture as it does in winter.)

It may be readily seen from these considerations that the rate with which the temperature changes with height in the lower atmosphere undergoes a diurnal cycle of variation. The greatest rate of decrease of temperature with height in the layer of air near the surface will usually be found about the time that the maximum temperature occurs at the surface, i. e., about 2 to 3 p. m. On the other hand, the least rate of decrease of temperature with height will be found in this layer about the time of the surface minimum temperature, i. e., just before dawn. In fact, under favorable circumstances a sharp inversion may then form.

Represents Negative Lapse Rate

Meteorologists apply the term "lapse rate" to the rate of decrease of temperatures with height. When the lapse rate is 0.55° F. per 100 feet (1° C. per 100 meters), it is called the "adiabatic lapse rate." An inversion is considered to represent a negative lapse rate.

Lapse rates equal to or greater than the adiabatic lapse rate usually prevail for at least a short distance above the surface during the warmer portion of clear, sunny days, when the ground is not snow or ice-covered. When a parcel of air is given an upward impulse, it will expand as it ascends and cool approximately at the adiabatic rate. Therefore, it will remain warmer than the surrounding air in the layer of super-adiabatic lapse rate.

The laws of physics teach us that if two bodies of air are at the same pressure, the warmer of the two will be the less dense (that is, "lighter"). Therefore, in view of the relative warmth of the upward-impelled parcel of air in the super-adiabatic layer, it will possess buoyancy and hence continue its ascent in the layer once it is started.

KEEP 'EM FLYING *TWA Hostess Hilda Pittenger, who has been chosen the official "Keep 'Em Flying" girl of the United States Army Air Corps recruiting program, is surrounded by a group of flying officers. Selected for the role by Col. W. H. Gilbert, originator of the slogan, she recently was inducted into her honorary post by Maj. E. R. Quesada, commanding officer of the 33rd Pursuit Group, in special ceremonies at Mitchell Field.*

Here It is Gents

(Continued from Page 2)

tempts to find any defect that might show up, but to find it early, because we know most trouble that is detected early can be corrected, and the earlier it is detected the shorter time, as a rule, it takes for correction.

"The pilot must understand that his ultimate success and safety lie in the early detection of trouble, and that in the Flight Surgeon he has a reliable friend who is more interested in overcoming the trouble than he is in finding it. To put it another way, if the Flight Surgeon is interested in finding something wrong, it is primarily with the idea in mind of eliminating the defect when and if it appears.

Works to Keep Pilots on Job

"The Flight Surgeon realizes that his success is measured not by how many defects he finds, but by how many pilots he can keep on the job flying as long as possible safely. This is the purpose of the periodical examination of the flying personnel, and fortunately there is more and more mutual confidence in this respect.

"The air line pilot is not expected to be a superman. The successful air line pilot is simply a normal, healthy individual who is blessed with a good degree of intelligence. He has, in common with the rest of us, some human faults and weaknesses. He is not perfect, but I believe no group of men in civil life come nearer attaining perfection in keeping mentally and physically fit, year in and year out, than do they. Their life is an established routine, once they have mastered the technical problems. They have two duties: one is to fly their plane over a familiar route and the other is to keep physically fit.

Success or Failure—Page Carnegie

"Here are some of the traits that the successful air line pilot has. He is good-humored, friendly, and happy, and has poise and self-respect. He is frank, alert, has a broad range of interests, and enjoys the outdoors and exercise. He is relaxed. He is socially well adjusted, is co-operative, adaptable, and enthusiastic. He has self-assurance and courage based on experience and ability. In addition to all these excellent qualities, he has one outstanding virtue that finally decides between success and failure; he has character and is inherently honest."

Dr. McKnight has established the admirable practice of sending the pilot to another doctor, usually a specialist, for treatment when trouble has become apparent. This places his administration of pilot maintenance on a plane far above any pecuniary interest.

These remarks coming from the Director of the Medical Department of American Airlines are quite significant. It can mean years of firm relationships in the years to come.

CHILEAN

Establishing a precedent indicative of rapid modernization of air transport ground facilities throughout Latin America, Pan American-Grace Airways announced that at Los Cerrillos Airport, Santiago, Chile, there has been appointed an airport hostess. The Company states that this first appointment to the position will be followed by similar ones at all trunk line stations. The appointee for Santiago, Miss Cynthia Steele, is a native of the copper and nitrate country in northern Chile and educated at Santiago college. Snapped in her new uniform, Miss Steele appears to be not lacking in personality.

Priority Control For Air Travel

Establishment of priorities will in the future govern assignment of passenger and cargo space on scheduled air liners.

Orders covering such priorities were recently issued through the office of Brig. Gen. Donald H. Connolly, military director of civil aviation and former Administrator of Civil Aeronautics.

Reservations will continue to be made with regular established air line agencies as has been the custom. Aside from the seats and cargo space required for national defense needs under the priorities setup, other travel will be assigned space as it is available.

This has not caused an appreciable shortage of seating space on the air lines. Although more national defense officials are riding, it can be reasonably assumed that non-essential civilian travel has decreased proportionately.

Gen. Connolly's original instructions establish the following priorities:

1. Personnel of the White House, upon personal request and identification.
2. Army, Navy, and Marine Corps airplane pilots of their respective ferrying commands traveling under orders, upon presentation of such identifying orders.
3. Military personnel (Army, Navy, and Marine Corps, including the allied military personnel) who present travel orders directing travel by air.
4. Army and Navy equipment, ammunition, supplies and material, essential to the war effort ordered for air movement by the War Department.
5. Personnel of government departments and agencies, and personnel whose activities are essential to the war effort, other than military personnel, traveling on specific orders for priority travel by air which certify such travel is necessary to the successful prosecution of the war effort.

CAA Announces Airport Policies

After having investigated problems involved in the co-ordination of civil and military aviation, the Civil Aeronautics Administration, the Army, and the Navy have tentatively agreed upon several basic issues of importance to civil airport programs in the future.

These decisions, recently released by Charles B. Donaldson, CAA Acting Director of Airports, are:

"1. That no new airport shall be established closer than six miles from an existing airport, or on, or within two miles adjacent to the letdown legs of a radio range or instrument landing beam, if within 10 miles of a radio range station.

"2. That the municipal or civil airports which have been taken over for flight training activities of the Army and Navy and occupied by military units will not be used for civil aircraft operations.

"3. That municipal or civil airports which have been occupied by the combat or tactical units of the Air Corps may be used jointly by scheduled air carrier aircraft, but not by nonscheduled." (This would not bar non-air carrier planes equipped with two-way radio since, like combat and air line planes, they could be regulated by radio airport traffic control.)

Civil Air Regulations — Legislation

(Continued from Page 6)

CAR AMENDMENT 60-33
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Airway Traffic Control Areas

This amendment strikes Section 60.24 "Airway Traffic Control Areas."

CAR AMENDMENT 60-34
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Flight Plan—Section 60.53

This amendment strikes the last sentence "(For a list of Airway Traffic Control Areas, see Section 60.24)" and adds in lieu thereof "Note—For a list of airway traffic control areas, see Air Navigation Radio Aids published periodically by the Administrator."

CAR AMENDMENT 60-35
ADOPTED NOVEMBER 21, 1941,
EFFECTIVE JANUARY 20, 1942.

Control Zone of Intersection—Section 60.531

This is amended by striking the note at the end which reads "For a list of control zones of intersection, see Section 60.22. For further information concerning aids to air navigation, see 'Tabulation of Air Navigation Radio Aids' published periodically by the Administrator of Civil Aeronautics" and inserting in lieu "For a list of control zones of intersection, see Air Navigation Radio Aids published periodically by the Administrator."

From Gridiron to Airways

* * *

Once hailed for his speed as an All-American fullback at Northwestern University, Steve Toth, Jr., now is traveling faster than ever before as a first officer of United Air Lines on the company's Chicago - New York run. They say, too, he is just as able at handling a Mainliner's controls as he was at carrying the pigskin for Northwestern. Toth still lives at the Delta Upsilon house on Northwestern's campus where he studies medicine in between his flights and where he also is alumni advisor to his undergraduate fraternity brothers.

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